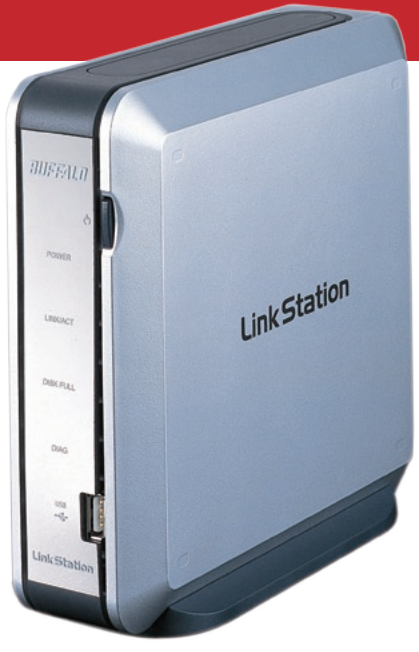
User Manual

LinkStation MultiMedia Home Server
HS-DGL Series



Congratulations on your purchase! Your LinkStation Home Server gives you a central location for storing all your media files in your local network. All your computers and media players will be able to access files on the LinkStation.

This user manual uses images representative of LinkStation user interfaces and software at time of publication. As time passes, future user interfaces and software may be available for download from: *http://www.buffalotech.com* (Support Section - Downloads).

Due to the evolving state of the product, the images and text in this manual may vary slightly from the images and text displayed by your LinkStation.

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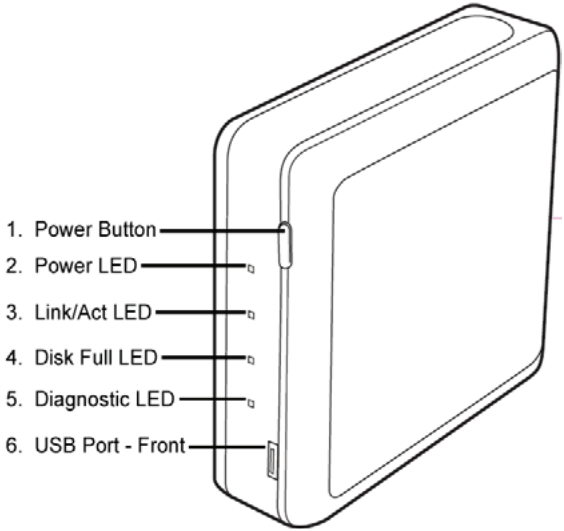
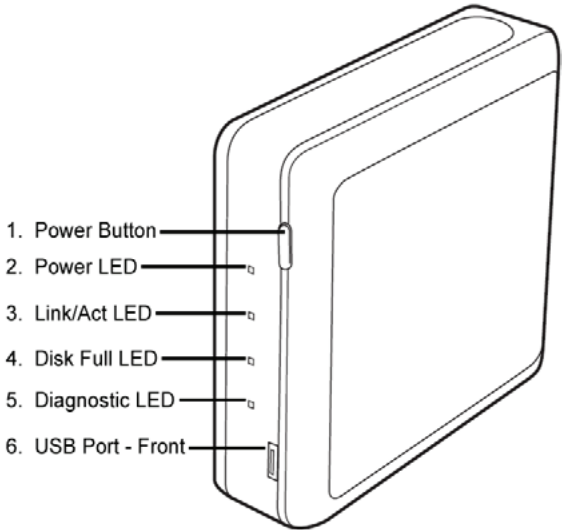
1. **Power Button –** The Power Button is used to power the LinkStation on or off. The power on process will take approximately 30 seconds to a full minute to complete. During this time, do not unplug the LinkStation from the wall outlet. To turn the LinkStation off, press and hold the power button for several seconds until the Power LED light begins blinking. At that time, stop pressing the button and shutdown should complete within 30 seconds.
2. **Power LED –** The Power LED light will blink during startup or shutdown, but otherwise will remain lit up while LinkStation is powered on.
3. **LINK/ACT LED –** The LINK/ACT LED light will light up if an Ethernet Cable is plugged in and attached to another network device, such as a router, hub, or PC. Periodically, the LED will blink, signifying network activity.

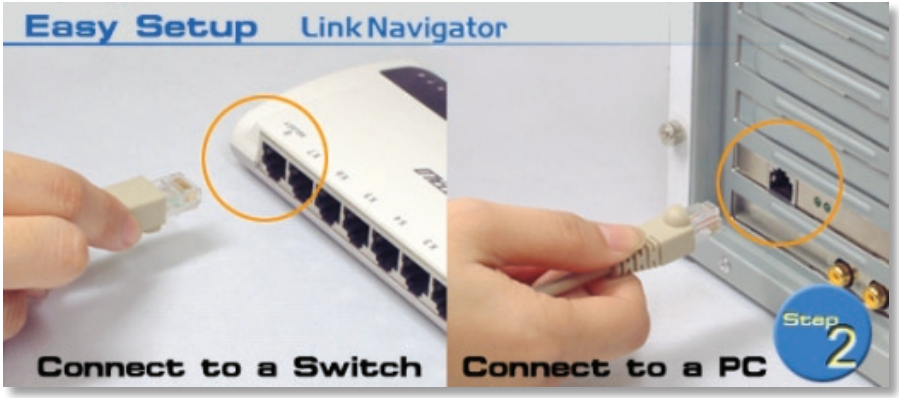


4. **Disk Full LED –** When LinkStation's internal drive approaches 95% of its capacity, the Disk Full LED will light up in red. For options to increase storage capacity, see *LinkStation Expansion* on *page 26*.
5. **Diagnostic LED –** The Diagnostic LED flashes if the LinkStation encounters an error.
6. **USB Port (Front & Rear) –** LinkStation offers two USB Ports for adding external drives or USB printers. Please see the *LinkStation Expansion* section on *page 26* to learn more about how to take advantage of the USB Ports on LinkStation.



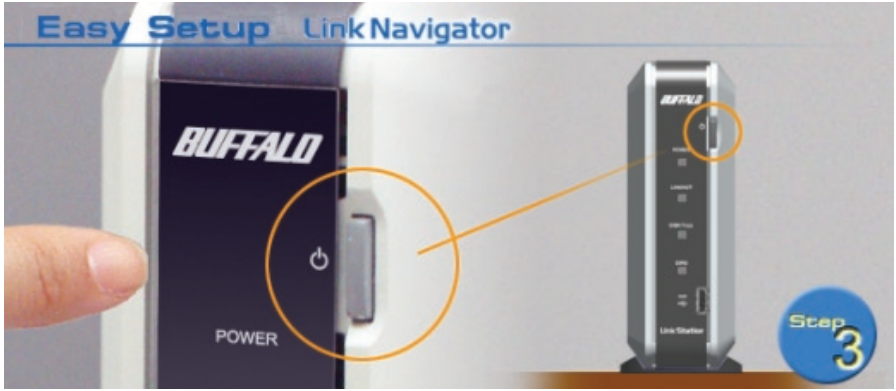
Plug the LinkStation's power cord into a power outlet.

Also, plug the included Ethernet Cable into LinkStation's RJ-45 network port located on the back of LinkStation.

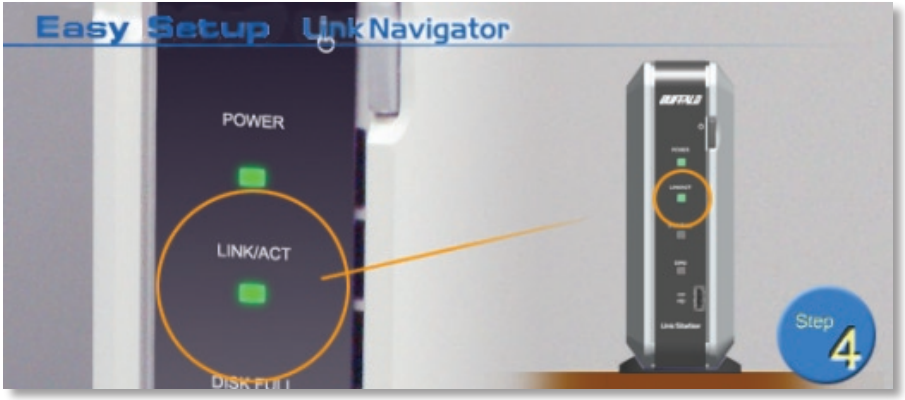


Connect the other end of the Ethernet Cable into a hub, switch, or router on the network, or connect it directly to a nearby running PC.

NOTE: It is recommended that you connect LinkStation to a hub or switch on your network. Connecting it directly to the back of a PC should only be used if absolutely necessary. Many features, including automatic DHCP IP Addressing, require LinkStation to be connected to a switch or hub. If the LinkStation is connected directly to a PC, you will have to configure it manually.



Turn the LinkStation on by pressing the power button until the green Power LED begins to flash.



Check the LINK/ACT light on the front of the LinkStation. If it is lit, then your LinkStation is connected properly; please turn to page 11 to continue setup. If it is not lit, continue to the next page.

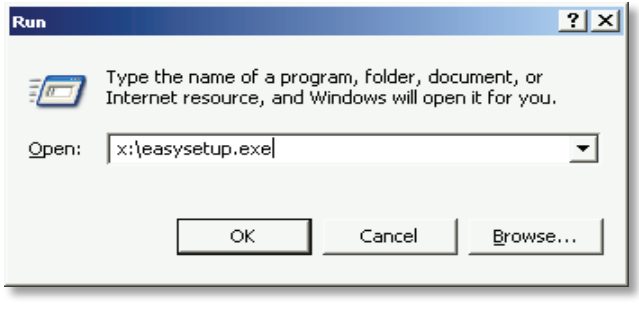
If the LINK/ACT LED on the front of LinkStation is lit, your LinkStation is connected properly.

If the LINK/ACT LED is not lit, make sure that:

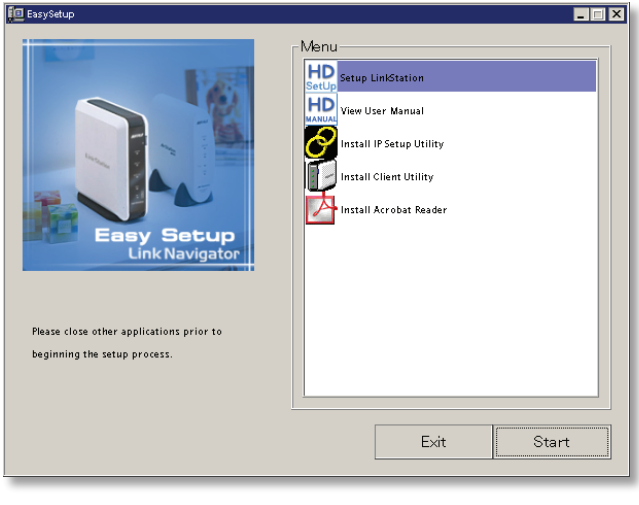
- Both LinkStation and the switch or PC are powered on.
- The Ethernet Cable is securely fastened to both devices.
- The Ethernet Cable is not damaged; verify this by trying another Ethernet Cable.

If problems persist, contact our technical support. Please see page 80 for support contact information.

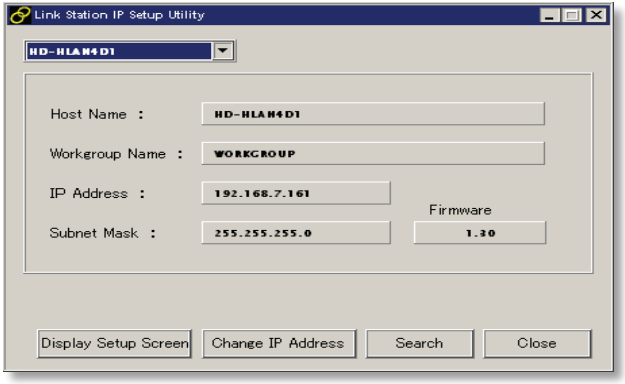
Insert the Link Navigator CD into a PC's CD-ROM drive. Depending on the PC's configuration, the EasySetup program may launch. If it does not automatically launch, manually launch it by pressing the *Start* menu, selecting the *Run...* option. When the *Run* dialog opens, type **x: easysetup.exe** (where x is the drive letter of the CD-ROM drive). Press *OK* to continue.



LinkNavigator is now running. Please press the *Install IP Setup Utility* icon, then press the *Start* button. The LinkStation IP Configuration Utility will launch and scan for networks.



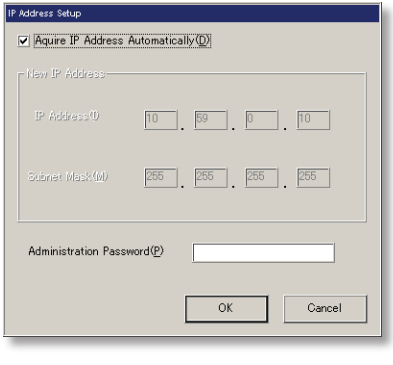
The IP Configuration Utility allows you to easily configure LinkStation's network settings. The *Search* button will re-scan the network for any and all LinkStations available. The drop down menu lists all available LinkStations. If there are multiple LinkStations on the network, then select the proper LinkStation from the pull down menu. Once the proper LinkStation has been selected, press the *Change IP Address* button to continue.



This section of the program changes LinkStation's IP address. Check the check box that states *Acquire IP Address Automatically*. This will give LinkStation an IP address from the network's router/DHCP server. A fixed (static) IP Address and Gateway can be set if preferred. The *Administrator Password* field sets an administrator password for the web-based configuration if desired. When finished, press the *OK* button.

Note: If LinkStation was plugged directly into a PC, the DHCP function will timeout and give LinkStation an IP address of *192.168.xxx.xxx*, where each xxx can be any value from 1-254. The subnet mask will default to 255.255.0.0. You will need to adjust your PC's IP Address and subnet mask to a different IP Address on the same subnet, or give the LinkStation a fixed IP address on the same subnet as your PC.

Example: if your LinkStation's IP address has defaulted to 192.168.11.113, you could set your PC's IP address to 192.168.11.114. If your PC's IP address is 192.168.14.2, you could set the LinkStation's IP address to 192.168.14.3. In each case, make sure that the Subnet Mask is set the same for both the LinkStation and the PC that will be accessing it.



LinkStation is now ready to be configured. The login prompt will appear. The user name is ***root***. There is no password by default. Only enter a password if you have configured one. Press the *OK* button when finished.

User name: ***root***
Password: default password is ***blank***.

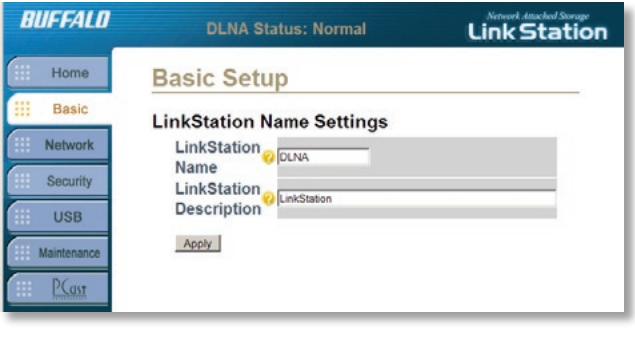
Only enter a password if you have configured one.

In the future, your LinkStation can be accessed by typing *//LINKSTATION_NAME* into a Web browser (where LINKSTATION_NAME is the name of your LinkStation set on page 17).

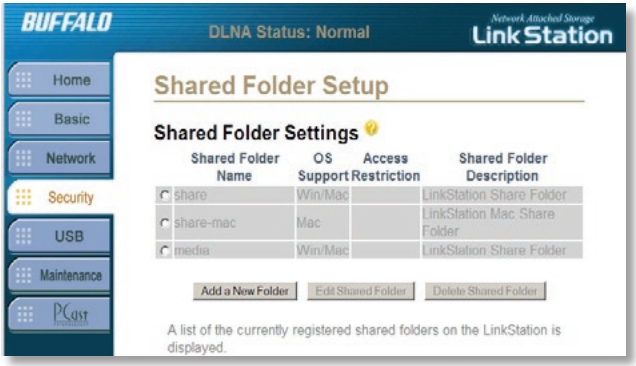
Congratulations, you have logged into LinkStation. These are the main configuration menus. Please bookmark this page for easy access. For detailed explanations of each menu and setting, please refer to the *Settings* section, starting on page 28 of this manual. To continue setup, click on the *Basic* link. Then, click on the *LinkStation Name Setup* link to continue.

This section allows you to change the name of your LinkStation. This name will be required to access LinkStation data. A friendly, easy name is recommended. Please enter an appropriate name in the *LinkStation Name* field. The name cannot contain any spaces or special characters. Alphanumeric characters including hyphen and underscore are allowed.

A short description of the LinkStation can be created in the *LinkStation Description* field. This description will be shown while browsing through Network Neighborhood on Windows machines. Once the fields have been completed, press the *Apply* button.



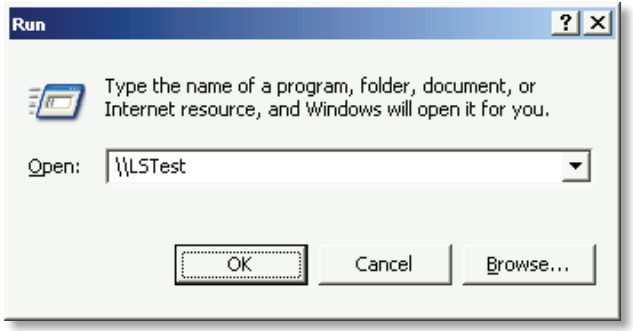
By default there are two shared folders on LinkStation. One is for Windows and Mac machines, while the other is for Macs only. Windows machines will only see one share. If you would like to create additional shares for specific users or specific types of data, then click on the *Security* tab on the left. Then click on the *Shared Folder Settings* link to continue. From this screen you can add new shares/folders or edit existing shares/folders. Press the *Add a New Folder* button to begin creating a new share/folder.



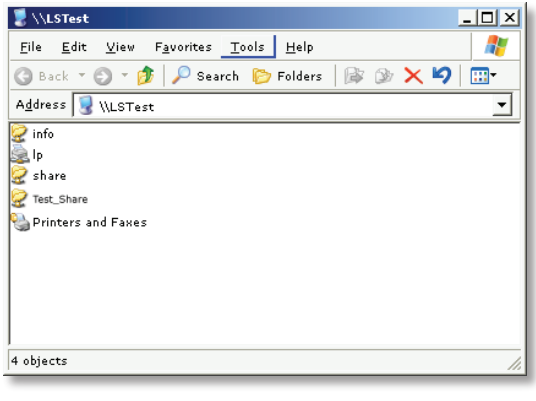
To begin setting up a new share, enter an appropriate share/folder name in the *Shared Folder Name* field. Set the remaining settings to the desired function. *Access Restriction* will turn on security features. Please refer to the *Settings* section (starting on page 28) of this manual before using the *Access Restriction* function. Press the *Apply* button when finished. A new shared folder has been set up. Please repeat this step to set up more shared folders.

Note: OS X Macs work best with "Win" shares. Use "Mac" shares only with older Macs, as AppleTalk entails a 2 GB filesize limitation.

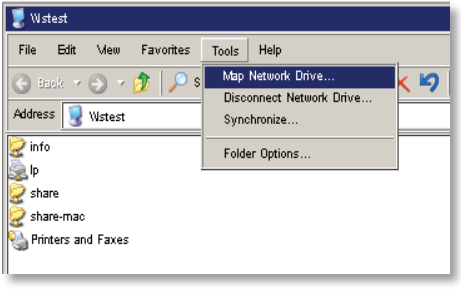
To access LinkStation from a PC, press *Start* and choose *Run....* Type "*LinkStation_Name*", where LinkStation_Name is the name of the LinkStation set on page 17. Press *OK* to continue.

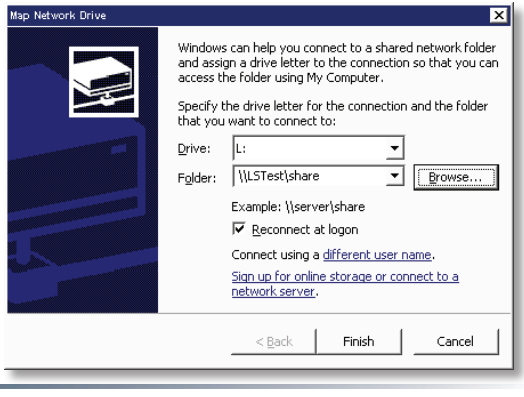


LinkStation's root directory will appear. You will see all of the configured shares. All users can read and write to all folders unless otherwise configured. To set up security and password protection, please refer to the *Settings* section (starting on *page 28*) of this manual. To setup a printer see the *LinkStation Expansion* section found on *page 26*. LinkStation can be accessed by multiple PC's simultaneously by following this step. A drive letter can also be mapped to the LinkStation; see the next page for more information.



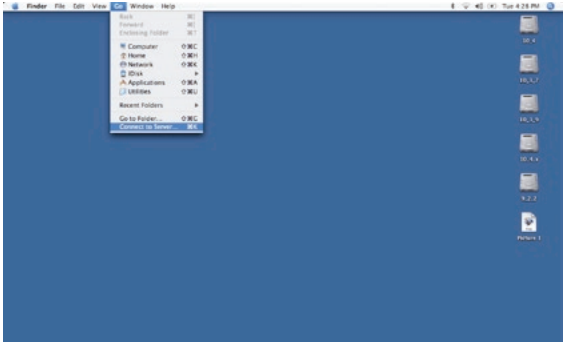
From the previous step's *Root Directory* screen, use the pull down menu and click *Tools* and then select *Map Network Drive*. The *Map Network Drive* program will run. Select the drive letter you would like LinkStation to assume from the *Drive:* pull down menu. Enter the \\LinkStation_Name\share_name in the *Folder:* field (where *LinkStation_Name* is the *LinkStation Name* set on *page 17* and *share_name* is the *Shared Folder Name* set on page 19). You can also browse for the shared folder by pressing the *Browse* button and searching through the *Entire Network* and then the *Microsoft Windows Network*. Check the *Reconnect at logon* checkbox to create this mapped drive everytime Windows starts. Once complete, press the *Finish* button. LinkStation is now mapped to a drive letter.

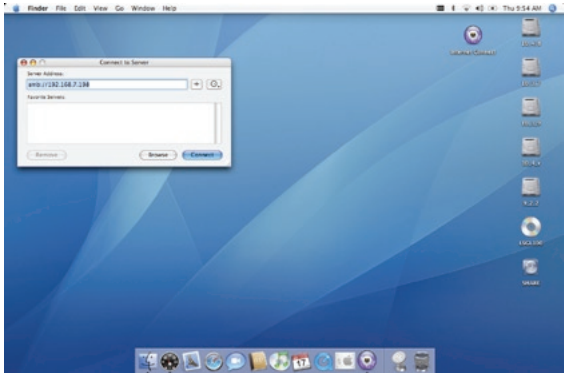



Map Network Drive
Windows can help you connect to a shared network folder and assign a drive letter to the connection so that you can access the folder using My Computer.
Specify the drive letter for the connection and the folder that you want to connect to:
Drive:
L:
Folder:
\\LSTest\share
Browse...
Example: \\server\share
Reconnect at logon
Connect using a different user name.
Sign up for online storage or connect to a network server.
< Back
Finish
Cancel

NOTE: If errors occur while mapping multiple drive shares, see page 66 for help.

If your Mac does not automatically detect your LinkStation's Share folder and put it on your desktop, you will need to add the LinkStation to the Mac's server list. Begin by clicking *Go*, and then choose *Connect to Server*.

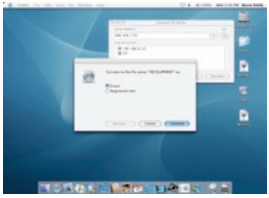




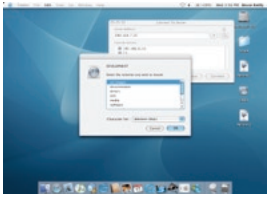
In the *Server Address* field, enter your LinkStation's IP address in the form *smb://ipaddress* (where "ipaddress" is your LinkStation's IP address), and click *Connect*.

If you don't know your LinkStation's IP address, see page 25.

Select *Guest* and click on *Connect*. Note: If you have configured share permissions on your TeraStation, select *Registered User* and enter your Registered User credentials.



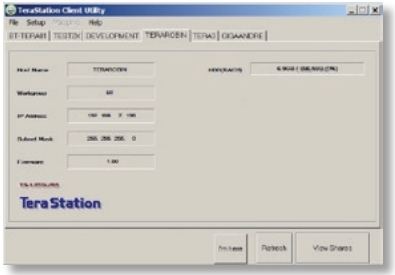
Select the volume that you want to mount, such as *share* or *share-mac*, from the list of folders on the LinkStation.



The share will open. A link to the shared folder will appear on your desktop.

If you don't know your LinkStation's IP address, there are several ways to get it.

One simple method is to use the LinkStation client utility (included on your CD) or TeraStation client utility (available for download from www.buffalotech.com) to find your LinkStation(s). You must have a Windows PC running on the network to use the LinkStation or TeraStation client utility.



If you have an all-Mac network with no Windows PCs available, you may need to get the LinkStation's IP address from your router's configuration utility. Many Buffalo routers list this information on the *Client Monitor* page, as shown to the right. Consult your router's documentation for instructions on identifying client IP addresses.

LinkStation has two USB 2.0 ports on it, one on the front and one on the rear. These ports can be used for adding an external USB Hard Drive or a USB Printer, allowing everyone on the network to share the USB device. You can also connect your digital camera to one of these ports and download your pictures directly to the LinkStation (see *page 27*). One printer or one external USB Hard Drive can be added to either of the ports. If you install both a printer and a USB hard drive, the printer must be plugged into the front USB port and the hard drive into the rear USB port. You may not install two USB Printers or two USB Hard Drives on a single Linkstation, only one of each device. To connect a USB device to LinkStation, plug it into one of the USB Ports and then enable it in the LinkStation configuration tool.

USB Hard Drive Information: See page 43 for information on enabling shared folders on a USB Hard Drive. Page 61 will show you how to format the USB Hard Drive. Pages 57 & 58 will show you how to set up LinkStation to backup to a USB Hard Drive.

USB Printer Information: See page 48 to set up a USB Printer on LinkStation.

Digital Camera Information: If your camera appears as a hard drive in *My Computer*, you can connect it directly to your LinkStation and download photos and movies automatically. See page 27 for more information.

If you plug a digital camera (or USB media card reader) directly into the LinkStation, you may automatically download all picture and movie files directly to the LinkStation.

Begin by connecting the camera to a USB port on the LinkStation and powering it on. The *Power* LED on the front of the LinkStation will blink for about 20 seconds as your camera is mounted.

Once the drive is mounted, quickly press the LinkStations's power button twice (do not hold it down) to begin downloading your media files. While files are downloading, the *Disk Full* LED will blink red.

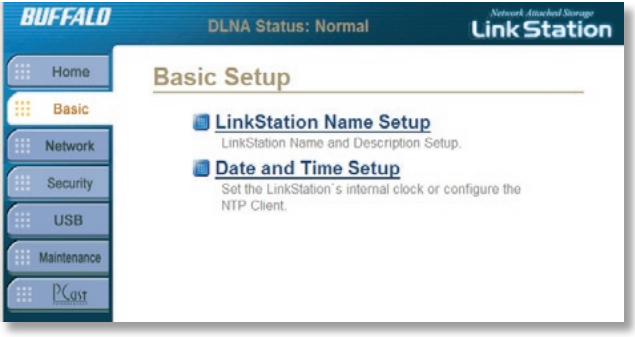
When the *Disk Full* LED ceases to blink, downloading has finished. Press the Power button one click to dismount your camera. The *Power* LED will blink until the dismount has finished, about 20 seconds.

Notes: Your digital camera must support hard drive emulation to do this. If your camera appears as a hard drive with a drive letter in *My Computer* when connected to a PC, you can connect it directly to your LinkStation and download photos and movies automatically.

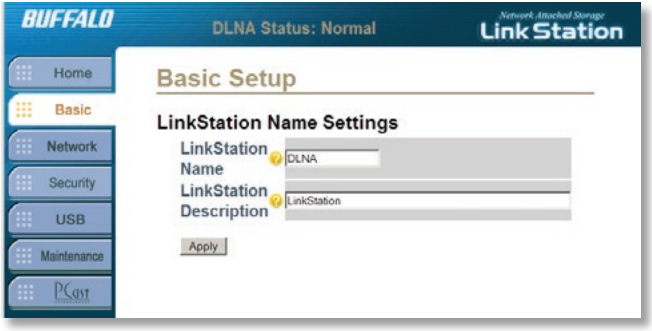
Never disconnect your digital camera from the LinkStation without dismouting it first! Doing so could damage your camera or LinkStation.

Downloaded files will normally appear in the */Share/Pictures* folder on your LinkStation. If you change the media folder from */Share* to */Media_Folder* on page 65, then downloaded files will appear in *Media_Folder/Pictures*.

LinkStation Name Setup:
LinkStation should be configured with a unique name to identify it over the network. A general description can be given for the device as well.



Date and Time Setup:
To properly catalogue shares and files by date, and to properly schedule tasks (such as backups), the current date and time must be set. An NTP client is configurable for automatic time corrections.

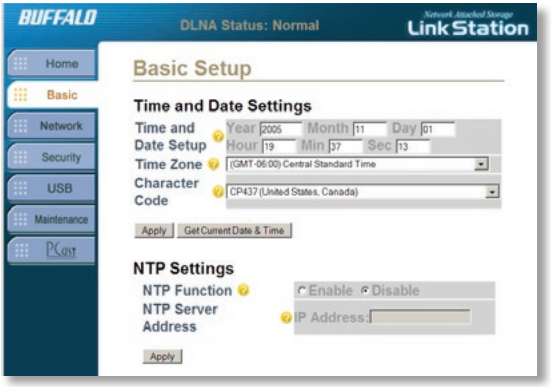


The **LinkStation Name** identifies the LinkStation on your network.

The LinkStation name should be something easy to remember. It can be named after its owner, its location, or the type of data that will be installed on it. If there is only one LinkStation on the network, then naming it "LinkStation" would be fine.

LinkStation Description is a handy way of differentiating multiple LinkStations. A suitable description would be a short sentence or phrase describing LinkStation's purpose. The description will appear when browsing through Network Neighborhood.

The *Apply* button will set these settings.



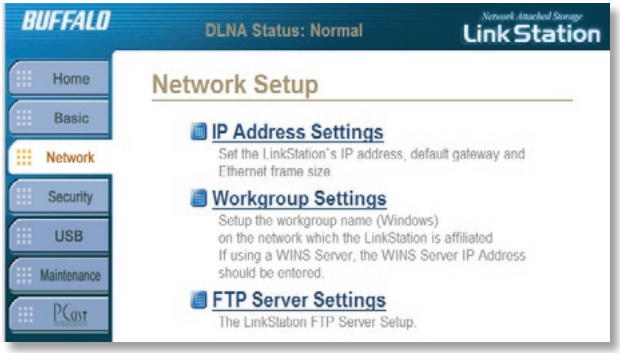
Time Setup: The LinkStation time must be set correctly to maintain logs and to schedule backups. Input the time and date or press the *Get Current Date & Time* button to set LinkStation's time to the same time as the PC that is being used to configure it. Check the *Daylight Savings Time* checkbox if your region is currently in DST. This will have to be unchecked in the fall and checked again in the spring each year. Select the appropriate region from the *Character Codes* pull down menu. This activates LinkStation's International Character Support.

NTP Settings: The NTP function enables the LinkStation to poll a network time server to correct its time. Once enabled, an IP Address of a NTP Server is required. A domain name will not work in this field; an IP Address is required. Buffalo recommends use of (time.nist.gov) *192.43.244.18* as an Internet NTP Server. *Sychronized Interval* sets how often time will be checked.

Press the appropriate *Apply* to save any changes.

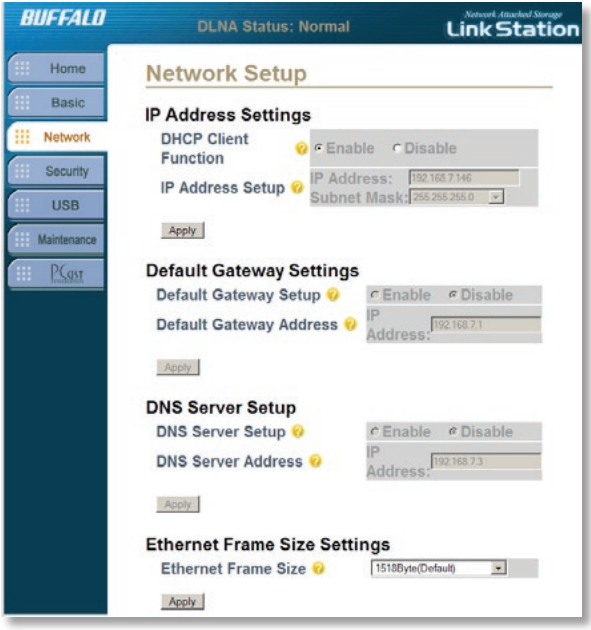
IP Address Settings: By default, LinkStation will attempt to obtain an IP Address from a DHCP Server. If a DHCP Server is not available, it will assign itself an IP Address of 192.168.xxx.xxx with subnet mask 255.255.0.0.

A designated static IP Address can be given to LinkStation within *IP Address Settings*. The gateway and subnet can also be set here.



FTP Server Settings: LinkStation includes a built-in FTP Server. The FTP Server can be used for accessing files over the internet using the FTP protocol. All of the FTP Server related settings can be accessed from *FTP Server Settings*.

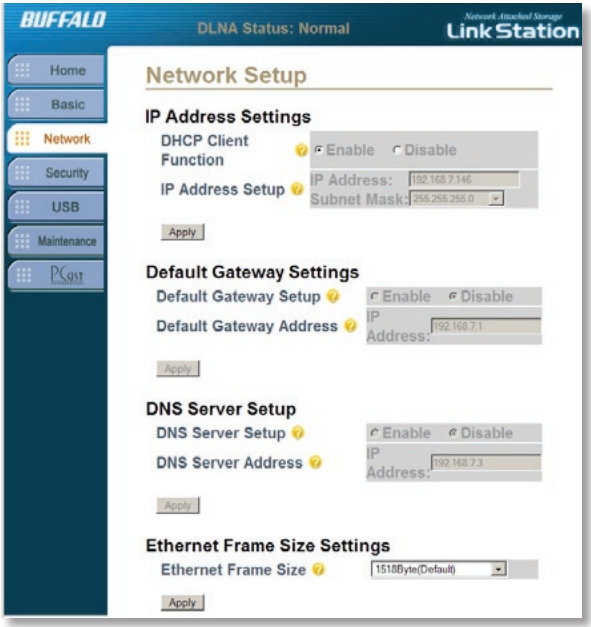
Workgroup Settings: Configure Windows workgroup name and Wins Server.



IP Address Settings: LinkStation needs an IP address to communicate on a network. If it can't obtain an IP Address from a DHCP Server, LinkStation will automatically use the IP Address *192.168.11.150*, or you may enter an IP address and subnet mask manually.

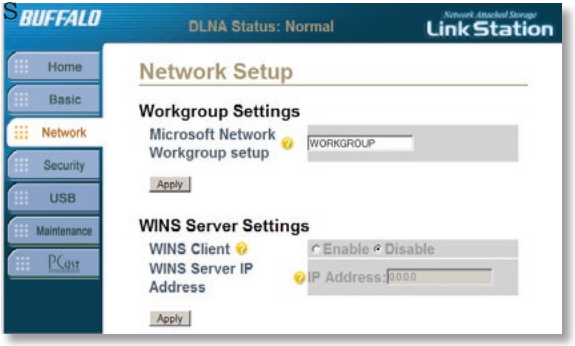
Enabling DHCP will set your IP address and subnet mask automatically. This is recommended for most users.

Default Gateway Settings: The LinkStation does not require a default gateway address. If DHCP is used, then a Gateway will be set up automatically. If DHCP is not used, configure the gateway manually. You can get the IP address for your local Default Gateway from your Network Administrator. In a small home network, this will usually be the IP address of your router. A Gateway is required for some features to work properly (e.g. NTP, FTP, Remote Web-Based Configuration, etc.)



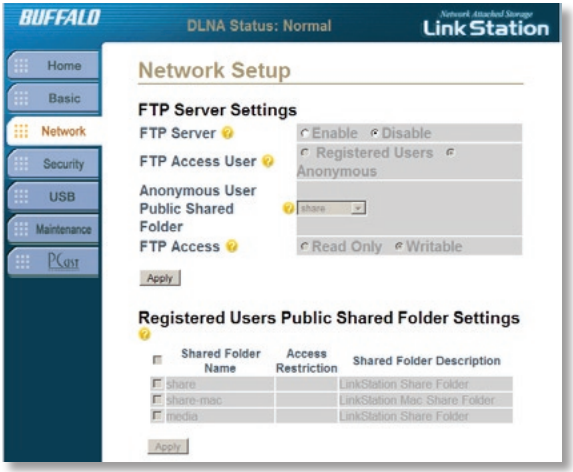
DNS Server: You may enable a DNS server here. Enter the DNS server's IP address. A DNS server is not needed for correct operation of the LinkStation.

Ethernet Frame Size: Do not change the Ethernet frame size unless you have a good reason for doing so.



Workgroup Settings: Select the appropriate Network ID. Enter the name of your workgroup in the *Workgroup Name* field. "*Workgroup*" is recommended for most home networks.

Wins Client Settings: LinkStation does not require a WINS Server. Don't enable WINS Client unless you have a good reason for doing so.



By default, LinkStation's **FTP Server** is disabled. You may enable it here. Select *Registered Users* for *FTP Access User* for a password protected FTP Server. *FTP Access* specifies whether the anonymous shared folder is read-only or writable. Check the shared folders that are to be available through FTP under *Registered Users Public Shared Folder Settings*. Multiple shared folders can be added when the Registered Users FTP is used. The shared folder's settings are carried over from LinkStation to the FTP Server. A user account that has been added to LinkStation can be used for FTP login credentials. Different user accounts have different access restrictions; their rights will carry over as rights on the FTP Server.

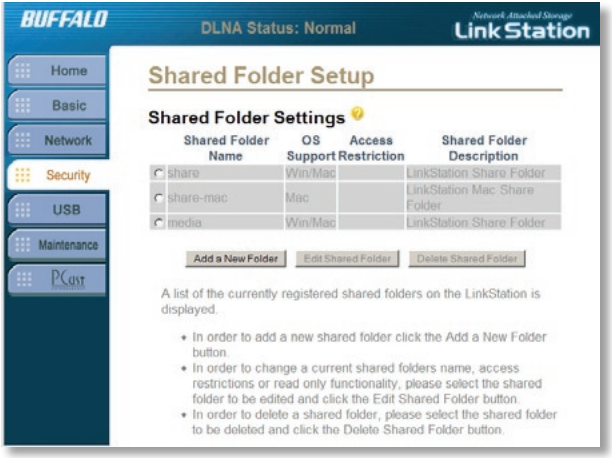
Buffalo does not recommend using anonymous FTP shares due to potential security concerns. If *Anonymous* is selected as the FTP type, then one and only one shared folder on LinkStation can be made available; select that folder as the *Anonymous User Shared Folder*. Anyone will be able to access it.

Shared Folder Setup:
Shared folders should be created to store data. Access to shared folders can be controlled via group and User permissions. By default a shared folder will allow access to all groups and users. Folders can be created in file formats for use by Windows, Mac, or both operating systems.

BUFFALO
DLNA Status: Normal
Network Attached Storage
LinkStation
Home
Basic
Network
Security
USB
Maintenance
PCast
Security Setup
Shared Folder Setup
Create, edit and delete shared folders.
Also the shared folder access restriction settings and read-only settings can be set here.
Group Setup
Create, edit and delete groups with affiliated users.
Individual groups must be registered in order to set access restrictions for a shared folder.
User Setup
Create, edit and delete users.
Individual users must be registered in order to set access restrictions for a shared folder.

Group Setup:
To ease security administration, groups should be created for users to control shared folder access. Once a group has been created, settings on shared folders can be modified to limit access to a group or groups. Also, individual users can be added to the groups.

User Setup:
Individual users and passwords should be created for each user that needs to access restricted shared folders. Once created, a user can specifically be given access to a shared folder or included in a group.


BUFFALO
DLNA Status: Normal
Network Attached Storage
LinkStation
Home
Basic
Network
Security
USB
Maintenance
PCast
Shared Folder Setup
Shared Folder Settings
Shared Folder Name
OS Support
Access Restriction
Shared Folder Description
share
Win/Mac
LinkStation Share Folder
share-mac
Mac
LinkStation Mac Share Folder
media
Win/Mac
LinkStation Share Folder
Add a New Folder
Edit Shared Folder
Delete Shared Folder
A list of the currently registered shared folders on the LinkStation is displayed.
In order to add a new shared folder click the Add a New Folder button.
In order to change a current shared folders name, access restrictions or read only functionality, please select the shared folder to be edited and click the Edit Shared Folder button.
In order to delete a shared folder, please select the shared folder to be deleted and click the Delete Shared Folder button.

LinkStation stores its data in shares. Multiple shares can be configured for different types of data. By default LinkStation has two shares. One share is for Windows and Macintosh computers. The other share is for Macintosh only. The default shares may be deleted if desired.

Add a New Folder: This begins the process to create a new share. The next page describes this process further.

Edit Shared Folder: This button allows sared folder information to be edited.

Delete Shared Folder: This button deletes a shared folder. Note that this will delete all of the data inside of the shared folder as well.

Shared Folder Name: Names can have up to 12 alphanumeric characters ("**-**" and "_" are supported).

Shared Folder Description: To differentiate the folders on LinkStation, a brief sentence or phrase evoking the type of data in the share is recommended.

Shared Folders OS Support: If only Windows and OS X machines will access this shared folder, then select *Win*. If older Macintosh machines will access this shared folder, then select *Win/Mac* or *Mac* support. *Mac* shares use AppleTalk, which comes with a 2GB filesize limit and various other limitations, so don't use them unless you need to. Linux can read *Win* or *Win/Mac* shares.

Access Restriction Function: This function turns on user/group permissions. Using this function will password protect a folder. For more information, see the next page about using *Access Restriction*.

Recycle Bin: If the recycle bin is disabled, then any deleted data from the shared folder cannot be restored. If the recycle bin is enabled, then all deleted data will be moved to a folder called *.trash*. Data will then need to be removed from the trash before it is permanently deleted. In some versions of Windows it may be necessary to set Windows to *display all hidden files and folders* before the .trash folder is visible. Mac OS 10.2 or higher is required for Recycle Bin functionality in Mac environments.

Enabling *Access Restriction* on the previous page will give you this screen, where you can restrict access to your new shared folder to specific users and/or groups.

NOTE: You may add restrictions to an existing shared folder by pressing the *Edit Shared Folder* button on the main *Shared Folder Settings* page and enabling *Access Restriction*.

Here you can specify who may access the new shared folder. Select which groups and which users will have access to the new shared folder. The group *hdusers* gives access to all users on the LinkStation, so this will allow access to every user on the LinkStation. Anonymous users will still not have access however. If a group is selected, then every member inside that group will have access to the shared folder. Users listed under Authorized Users will also be able to access the folder.

Press the *Apply* button when you're finished making your selections.

BUFFALO
DLNA Status: Normal
Network Attached Storage
LinkStation
Home
Basic
Network
Security
USB
Maintenance
PCast
Shared Folder Setup
User Group Settings
Group Name
Member Users
Group Description
hdusers
(All Users)
Default group
Add New Group
Edit Group
Delete Group
A list of the Groups currently registered on the LinkStation is displayed.
• The hdusers group is the default group, it cannot be edited or deleted.
To add a new User Group, please click the Add New Group button.
• To edit the current User Group name and affiliated users, please select the user group to be edited and click the Edit Group button.
• To delete a user group, please select the user group to be deleted and click the Delete Group button.

Groups allow for quicker security administration. A group is a group of users with specific rights to specific shared folders. A business may want to make a *Manager* group and add all of its managers to the group. This group could have access to a shared folder that the regular employees do not have access to. By default there is a share called *hdusers*. This share cannot be deleted.

Add New Group: This begins the process of creating a new group.

Edit Group: This allows group settings to be changed. Users can be added or removed from the group here.

Delete a group: This button deletes a group. The users inside the group will still exist but will no longer be members of the deleted group.

Group Name: This will be the name of the group. The name should reflect the types of users added. For example, the managers's group could be named 'Managers'.

Group Description: The group description should be used to differentiate the different groups on LinkStation. A brief sentence or phrase regarding the users inside of the group is recommended.

Select Affiliated Users: Select the users that are to be added to this new group. The check box next to the user's name should be checked if they are to be added to the group. Users can be added to or removed from the group at a later time by editing the group and checking or unchecking their respective boxes.

Clicking ***Apply*** will set the settings.

BUFFALO
DLNA Status: Normal
Network Attached Storage
LinkStation
Home
Basic
Network
Security
USB
Maintenance
PCast
Shared Folder Setup
User Settings
User Name
User Description
No users are registered
Add New User
Edit User Info
Delete user
A list of the currently registered users on the LinkStation is displayed.
To add a new user, please click the Add New User button.
To edit user information, please select the user to be edited and click the Edit User Info button.
To delete a user, please select the user to be deleted and click the Delete User button.

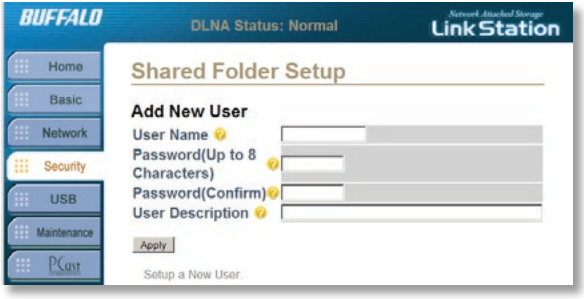
User accounts allow LinkStation to limit access to certain or all shared folders. A user account is assigned a password. This password is used to obtain the data inside the shared folder. If a user does not have the proper user account credentials, then access to the data will be denied.

NOTE: User accounts will only be used on shares with the *Access Restriction* function turned on.

Add New User: This begins the process of creating a new user.

Edit User Info: This allows user information to be changed. A user's password may also be changed here.

Delete User: This button deletes a user. If a user is deleted, they will also be removed from any groups they were associated with.



User Name: Enter a name for each user here. Each name should indicate the named user. For instance, you could use the user's first name as the user name.

Password: The user password is the password associated with the user. The password can be up to 8 characters and can contain spaces, hyphens, and underscores. The password will need to be confirmed on the *Password (Confirm)* line as well. The password can be changed at a later time by editing the user's settings.

User Description: The user description can help to differentiate different users on LinkStation. The *Apply* button will set the settings.

USB Details:
Normally, all devices currently connected to the LinkStation will be displayed under *USB Details*. Newly attached USB devices may not be visible here until the LinkStation is restarted.

USB Disk Setup:
An attached USB Disk can be configured as an additional shared folder for additional storage space. The attached USB Disk must be formatted by the LinkStation before it can be used on LinkStation. If a USB Disk is attached to LinkStation, it must be attached to the rear USB Port.

Clear Printer Job Queue:
If the printer queue on the LinkStation becomes corrupted or frozen, it may be cleared here. All submitted print jobs will need to be re-sent to the printer.

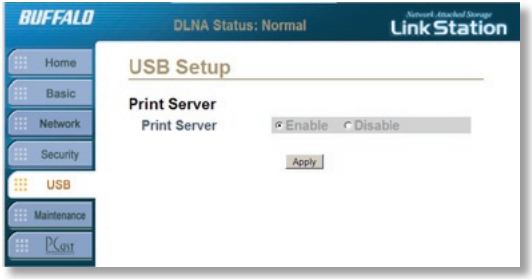
USB Printer Setup:
Postscript Printers can easily be shared from the LinkStation via USB. If a non-Postscript Printer is attached, additional information from your printer's documentation is required in the LinkStation printer setup to ensure proper operation. Once installed, the printer will be available to users on LinkStation.

USB Information: The USB Information table lists information about connected USB devices (such as printers and hard drives). It lists the USB Class (Printer or Storage), the Manufacturer if available, the Device Name, and whether it is a USB 1.1 or USB 2.0 device.

Setup USB Disk: The USB Disk setup options specifies if an attached USB Disk is to be used as a shared folder. Using it as a shared folder increases the capacity of LinkStation. Selecting the *Disable* option makes it impossible to make the USB Disk drive a shared folder. However, if set to *Disable*, the USB Disk will still be available for Disk Backup.

NOTE: The USB Disk must be attached to the rear USB Port to work properly. The front USB Port only works with USB Printers.

Recycle Bin: The recycle bin is a feature that moves deleted data to a recycle bin before completely deleting. If the recycle bin is disabled, then any deleted data inside the USB Disk cannot be restored. If the recycle bin is enabled, then all deleted data will be moved first to a folder called *.trash* on the USB Disk. Data may then be removed from the recycle bin before it is permanently deleted. In Windows it may be necessary to set Windows to display all hidden files and folders before the .trash folder is visible. Consult your OS documentation for more information. Mac OS 10.2 or higher is required for Recycle Bin functionality in Mac environments.



Print Server: The Print Server function turns printer sharing on or off. The Print Server function must be set to *Enable* if a printer is to be shared.

LinkStation supports most PostScript printers. It doesn't support bi-directional printers.

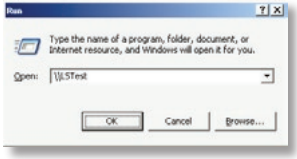
Non-PostScript printers are not supported by Buffalo Technology. You may be able to get enough information from your printer's documentation to manually configure this page, select a compatible printer from the *Printer Type* pull down menu, and get it to work, but our technical support cannot help you with this.

Press the *Apply* button when settings are complete. For the printer to work on your network, it must be plugged into one of LinkStation's USB Ports, and the printer must be powered on. You may have to turn the LinkStation off and then on again after connecting the USB printer to one of the USB Ports.

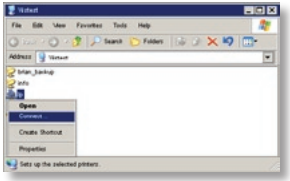
Please see *page 48* for information on installing the printer to Windows PC's on your network.

Now that LinkStation is set up to share your printer, you can easily add the printer to any Windows PC on your network. Follow these steps for each PC that you want to be able to access the printer.

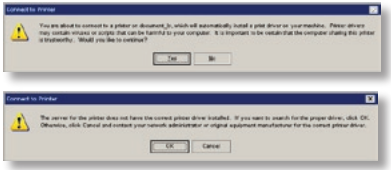
- Access the LinkStation by pressing the Start Menu, selecting the 'Run...' option and entering \\LinkStation_Name (where LinkStation_Name is the name set on *page 18*). Press the *OK* button when finished.



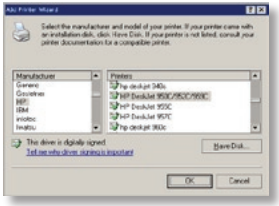
- Right click on the lp icon and select Connect. You may receive a warning about installing from a trust worthy source. If you receive this message, press the Yes button to continue.
  NOTE: The LinkStation's Printer name cannot be changed from lp (short for "LinkStation Printer").



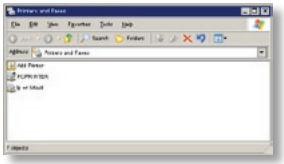
- You will receive a warning stating that the server does not have the proper drivers. Press the OK button to continue.



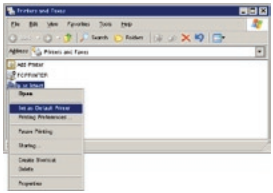
- The *Add Printer Wizard* will launch. Select the proper driver for your printer. If the specific printer is not in the list, you will be required to insert the CD that came with your printer into your PC's CD-ROM drive and press the *Have Disk* button. Refer to your printer documentation for further information on installing your printer if necessary. Press the *OK* button when finished.



- The printer is now successfully installed. To further configure and test the printer, open your PC's Control Panel. The Control Panel can be accessed through 'My Computer' or through the Start Menu. Once the Control Panel is open, double click on the *Printers and Faxes* icon.

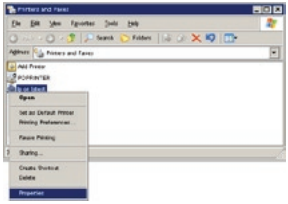


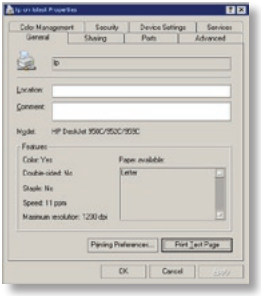
- If *lp* is the only printer installed on the PC, then it will automatically be set as the default printer. However, if it is not the only printer on the PC, then it is not set as default. If you would like to make it the default printer, right click on the *lp* printer icon and select the *Set as Default Printer* option.

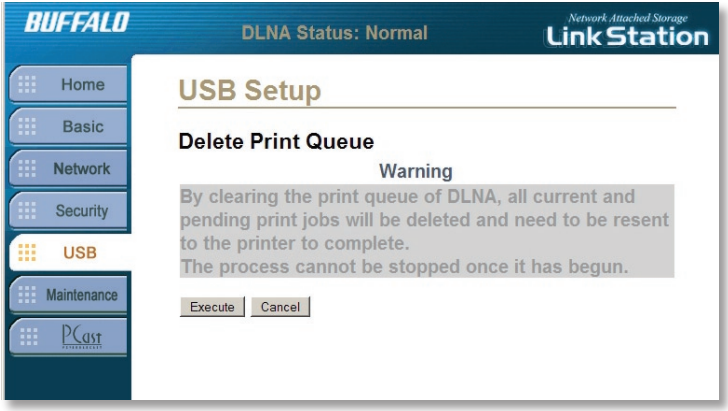


- To print a test page or configure additional printer settings, right click on the *lp* printer icon and select *Properties*. This will open the printer's driver properties page.
- Press the *Print Test Page* button to print a test page. You can also browse through the available settings for the printer. Please refer to the printer's documentation for more information on changing the printer's settings.

NOTE: The printer installation process can be done on any machine on your network. Multiple machines may print to the printer at the same time. Repeat this process on all computers that require access to the printer.







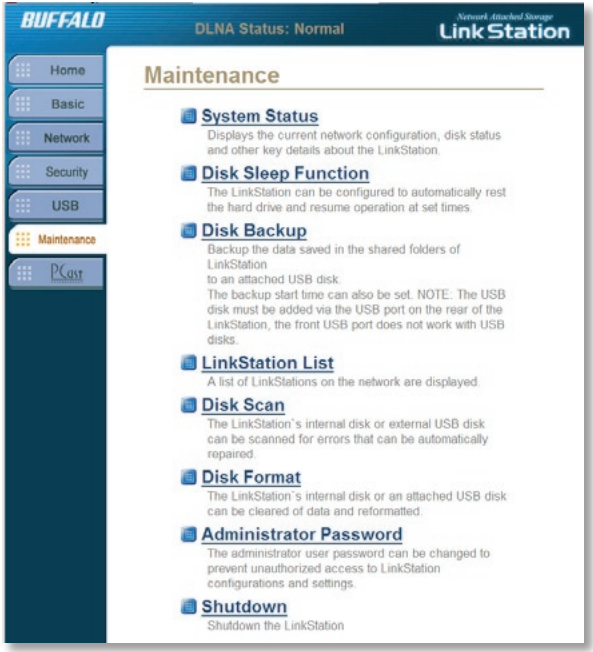
Deleting print jobs may be necessary if a corrupt print job was sent to a printer. If printing to the printer connected to LinkStation suddenly fails, it is recommended that you *Execute* the *Delete Print Queue* program.

Deleting the print jobs will require that users re-send their print jobs to the printer.

If there are still problems printing to the printer, then check the printer manufacturer's documentation for troubleshooting information. Also, verify that the USB cable is securely fastened to both the printer and the LinkStation. Finally, you may try turning the LinkStation off, turning the printer off, turning the printer back on, and then turning the LinkStation back on again.

System Status: The System Status page displays current information about LinkStation.

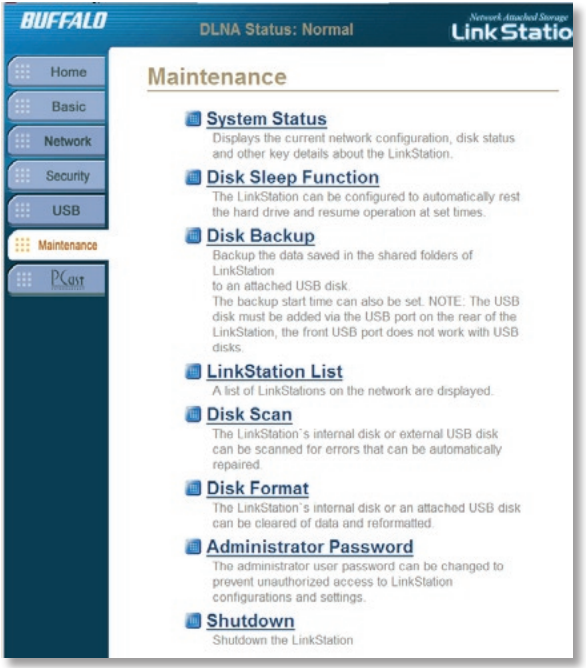
Disk Sleep Function: The LinkStation can be scheduled to enter a sleep mode to preserve energy at a scheduled time. The sleep time cannot coincide with the time of a scheduled backup or the backup will fail.


BUFFALO
DLNA Status: Normal
Network Attached Storage
LinkStation
Home
Basic
Network
Security
USB
Maintenance
PCast
Maintenance
System Status
Displays the current network configuration, disk status and other key details about the LinkStation.
Disk Sleep Function
The LinkStation can be configured to automatically rest the hard drive and resume operation at set times.
Disk Backup
Backup the data saved in the shared folders of LinkStation to an attached USB disk.
The backup start time can also be set. NOTE: The USB disk must be added via the USB port on the rear of the LinkStation, the front USB port does not work with USB disks.
LinkStation List
A list of LinkStations on the network are displayed.
Disk Scan
The LinkStation's internal disk or external USB disk can be scanned for errors that can be automatically repaired.
Disk Format
The LinkStation's internal disk or an attached USB disk can be cleared of data and reformatted.
Administrator Password
The administrator user password can be changed to prevent unauthorized access to LinkStation configurations and settings.
Shutdown
Shutdown the LinkStation

Disk Backup: Individual Shares or folders inside of shares can be scheduled for backup to an attached USB Disk. The scheduled backup time should not conflict with a scheduled sleep time.

Disk Scan: Periodically it may be necessary to run a disk scan. A disk scan will repair errors upon the LinkStation's drives' surfaces and fix errors within the file system. A thorough disk check can take several hours to complete.

Disk Format: The internal drive or an attached USB drive can be formatted and rebuilt. Once a format begins all data will be lost on the drive. Care should be taken to backup any data stored on the drive prior to formatting. External USB hard drives attached to LinkStation may need to be formatted via this Disk Format utility before being used by LinkStation.


BUFFALO
DLNA Status: Normal
Network Attached Storage
LinkStatio
Home
Basic
Network
Security
USB
Maintenance
PCast
Maintenance
System Status
Displays the current network configuration, disk status and other key details about the LinkStation.
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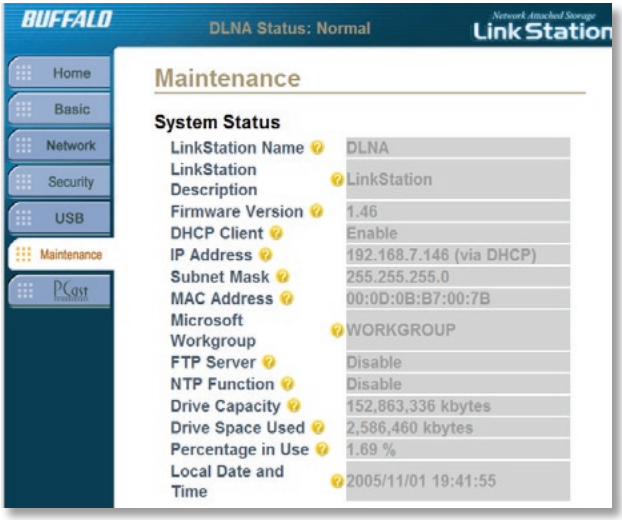
The LinkStation can be configured to automatically rest the hard drive and resume operation at set times.
Disk Backup
Backup the data saved in the shared folders of LinkStation to an attached USB disk.
The backup start time can also be set. NOTE: The USB disk must be added via the USB port on the rear of the LinkStation, the front USB port does not work with USB disks.
LinkStation List
A list of LinkStations on the network are displayed.
Disk Scan
The LinkStation's internal disk or external USB disk can be scanned for errors that can be automatically repaired.
Disk Format
The LinkStation's internal disk or an attached USB disk can be cleared of data and reformatted.
Administrator Password
The administrator user password can be changed to prevent unauthorized access to LinkStation configurations and settings.
Shutdown
Shutdown the LinkStation

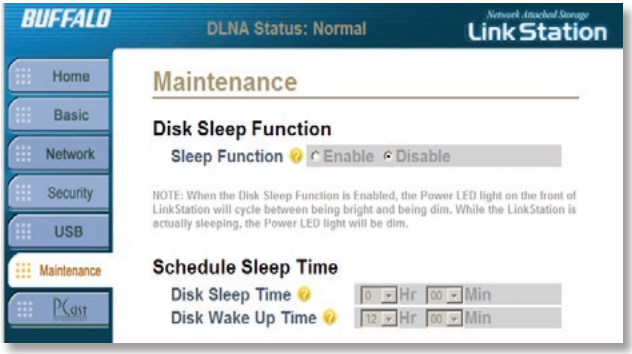
Administrator Password: By default, the administrator name (login) is "root" with a blank password. *Administrator Password* allows you to change the administrator password.

Shutdown: Shutdown allows an administrator to turn off the LinkStation without physically pressing the power button.



The **System Status** page briefly lists important configuration information about LinkStation.

No configuration changes can be made from this screen, but it's a good place to review settings.



Sleep Function: *Enable* Sleep Function to allow LinkStation to go into Sleep Mode. In Sleep Mode, LinkStation's internal hard drive shuts off until the *Wakeup Time*. *Disable* Sleep Mode if you want LinkStation to always remain on. When LinkStation is sleeping, data cannot be accessed and scheduled backups will fail.

Schedule Sleep Time: If the *Sleep Function* is set to *Enable*, then enter an appropriate *Disk Sleep Time* and *Disk Wake Up Time.*

Click *Apply* to save these settings.

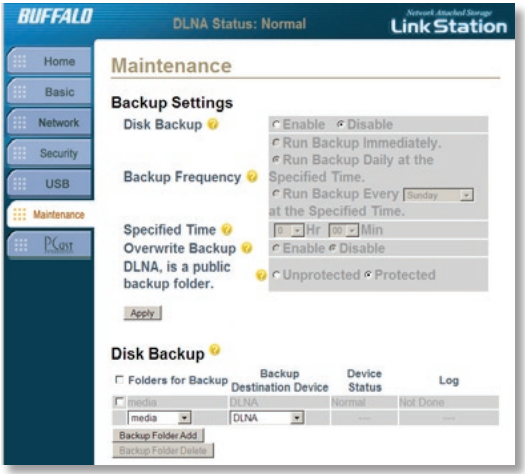
Disk Backup Folders:

Before Disk Backup can be enabled, at least one share or folder must be set to be backed up. Use the drop down menu under *Folders for Backup*. All files and folders inside the selected folder will be backed up. Once a share or folder is selected, press the *Backup Folder Add* button to add it to the list of folders that will be backed up.

To remove a folder from the list, check it and press the *Backup Folder Delete* button.

Select the destination for the backup files under *Backup Destination Device*.

Once folders have been selected, *Disk Backup* may be enabled.



Disk Backup: The *Disk Backup* function allows LinkStation's data to be backed up to an external USB Hard Drive or another LinkStation on the network. The *Disable* option turns off the ability to backup.

Backup Frequency: *Run Backup Immediately* runs the backup program once. *Run Backup Daily at the Specified Time* scedules a regular daily backup. The *Run Backup Every (Day) at the Specified Time* option makes LinkStation perform a backup at a scheduled time once a week.

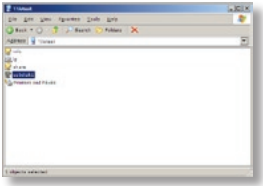
Specified Time: The *Specified Time* is the time that LinkStation will perform its backup if scheduled.

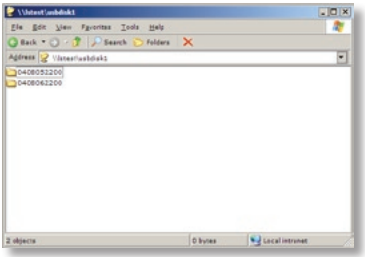
Overwrite Backup: *Enable* will let each new backup overwrite any previous backups, saving disk space. Setting this to *Disable* creates a new backup each time backup runs.

To restore a backup, the backup destination (if on a USB hard drive) must be shared as a shared folder. This setting can be enabled on page 47. Then, browse to the *usbdisk1* folder. This is where backup data is stored.

Backups in *usbdisk1* are in folders named YEARMONTHDAYTIME, so "0408062200" is a backup that occurred on August 6th, 2004 at 22:00 (or 10pm). If *Overwrite Backup* was set when the backup ran, then only one backup folder will exist. From inside the backup archive, data can be moved or copied to its original (or a new) location.

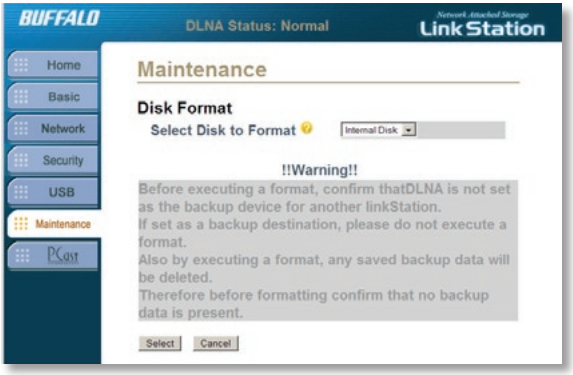
NOTE: If a LinkStation fails, its USB backup drive can be attached to a different LinkStation to recover backup data. On the new LinkStation, share it as a shared folder to access the backup data.





Disk Scan: The *Disk Scan Target* is the disk that is to be scanned. The *Internal HDD* option is for LinkStation's internal hard drive. If a USB Hard Drive is connected to LinkStation, then it will also be available from the pull-down menu. Please select the disk that should be scanned. If both disks are to be scanned, then the *Disk Scan* must be run twice; once for each disk.

Disk Scan Type: The *Disk Scan Type* pull-down menu allows you to select whether the *Disk Scan* is to be a *Normal* or a *Thorough scan*. A *Normal* scan is a fast disk scan. The *Thorough Scan* will scan every sector individually. The *Thorough Scan* can take up to several hours to complete. It is recommended that you not access LinkStation or turn LinkStation off during a *Thorough Scan*.



Select a disk to format:

The pull-down menu lists the drives that can be formatted. If a USB Hard Drive is connected to LinkStation then it will be available for format. The *Internal HDD* can also be formatted from this page.

NOTE: Formatting a drive will erase all data. Do not format a drive unless you need to! Brand new USB Disks may need to be formatted before the LinkStation can write to them, but the internal LinkStation hard drive comes pre-formatted. Do not reformat the LinkStation's internal drive unless you're sure that's what you want to do!

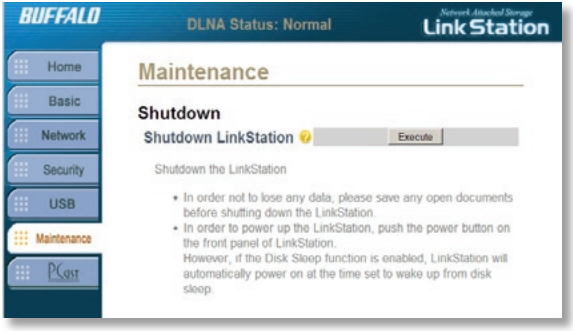
Administrator Name: The *Administrator Name* is used to log into the Web-Based configuration. The default *Administrator Name* is "root". It cannot be changed.

Old Password: Please type the current administrator password into this field. By default there is no LinkStation password. If a password has already been set on LinkStation, then enter the current password.

New Password: Please enter the new desired administrator password. This password can be up to 8 characters and may include spaces, hyphens, and underscores.

New Password (Confirm): Please re-type the *New Password* into this field. This will verify that the proper password was typed in correctly.

Click *Apply* when finished.


BUFFALO
DLNA Status: Normal
Network Attached Storage
LinkStation
Home
Basic
Network
Security
USB
Maintenance
PCast
Maintenance
Shutdown
Shutdown LinkStation
Execute
Shutdown the LinkStation
• In order not to lose any data, please save any open documents before shutting down the LinkStation.
• In order to power up the LinkStation, push the power button on the front panel of LinkStation.
However, if the Disk Sleep function is enabled, LinkStation will automatically power on at the time set to wake up from disk sleep.

Shutdown:

The *Shutdown* function in LinkStation allows an administrator to shut down LinkStation without using the power button.

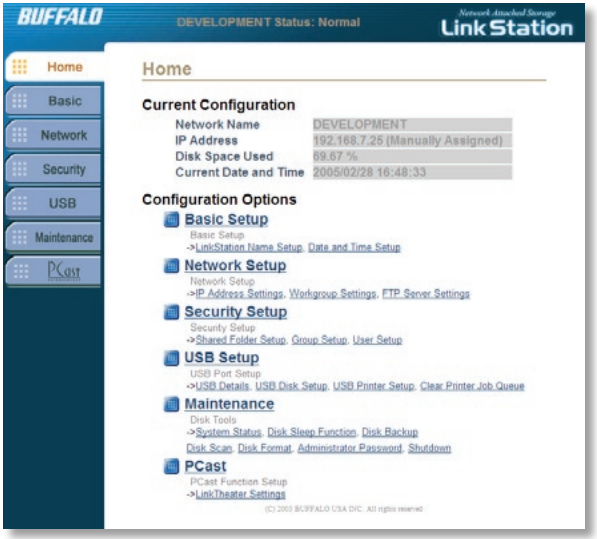
This feature can be handy if LinkStation is being configured from a location not close to the LinkStation's power button.

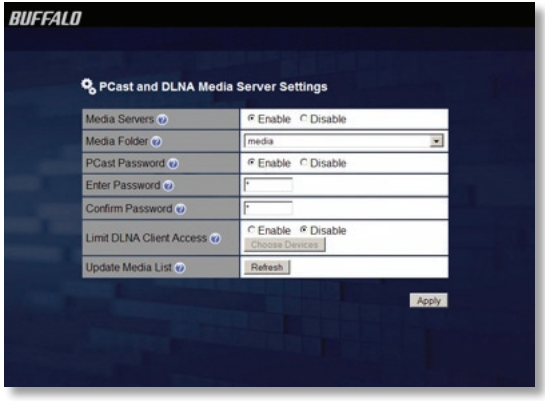
Press the *Execute* button to shutdown the LinkStation. The LinkStation can then only be turned on by pressing the power button on the front of it or by waiting for the *Wake Up Time* (if Disk Sleep is enabled on *page 53*).

PCast and DLNA are special services that can run within LinkStation, allowing it to be a media server for LinkTheater or other digital multimedia players. The LinkTheater product is a media server that connects to your television and streams multimedia content. The PCast service allows you to stream any multimedia content directly from LinkStation to the LinkTheater. DLNA is an industry standard supported by many digital multimedia players.

If you do not own a multimedia player, PCast and DLNA settings can be completely ignored.

For more information on LinkTheater, please visit Buffalo Technology's web site at **http://www.buffalotech.com** and look under Multimedia Products.





Media Server Function: The *Media Server Function* will need to be enabled for this function to work. If you do not own a LinkTheater than disabling this feature is recommended.

Media Folder: The *Media Folder* specifies which shared folder to share with LinkTheater. All of the multimedia files inside this shared folder will be available to LinkTheater. **NOTE:** At this time, only one shared folder can be accessed with LinkTheater. Please make sure that all of the multimedia files you wish to share with LinkTheater are in this shared folder.

PCast Password: Restrict access to your media server by specifying an access password.

Limit DLNA Client Access: Choose what devices can access your media server. See next page for more information on configuration.

Update Media List: This updates the list of multimedia folders and files displayed by your media player. Some changes may not be shown until the list is refreshed or the media player rebooted.

Get to this page by clicking *Choose Devices* on the previous page.

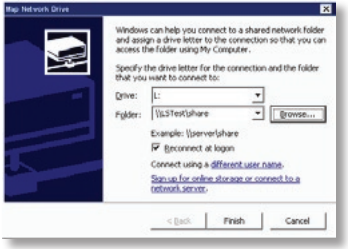
Search for DLNA Client: This will show a list of all clients that could connect to the media server. For any that you want to have access, put a checkmark next to their MAC address and click *Allow Access*. You can deny access to any DLNA client by checking it and clicking *Deny Access*.

When adding multiple shares, it's possible that you may get an error message similar to the

Windows
The mapped network drive could not be created because the following error has occurred:
Multiple connections to a server or shared resource by the same user, using more than one user name, are not allowed. Disconnect all previous connections to the server or shared resource and try again..
OK

This is caused by having multiple shares to the same resource using different credentials. The error occurs when connecting to at least one secure, restricted share. Due to a constraint in Microsoft Windows only one set of credentials can map drive letters to a network resource such as the LinkStation. Thus, only one username and password can be used while mapping to your LinkStation, even if different drive letters are mapped to different shares. If unsecure, unrestricted shares are mapped, and then an attempt to map a secure, restricted share occurs, this error will occur. To remedy the situation, you must create all shares using the same login and password information. Please follow the steps on the next page to remedy this problem.

When mapping any share, select the 'Connect using a different user name' option. A login and password prompt will appear. Enter the same username and password for all LinkStation shares. This username and password is the username and password required for the secure, restricted share. Use this same login procedure for all unsecure, unrestricted and restricted shares on LinkStation. Only one username and password can be used for all mapped shares! Thus, a PC cannot have two mapped, secured shares that use different username and passwords.


Map Network Drive
Windows can help you connect to a shared network folder and assign a drive letter to the connection so that you can access the folder using My Computer.
Specify the drive letter for the connection and the folder that you want to connect to:
Drive:
L:
Folder:
\\LSTest\share
Browse...
Example: \\server\share
Reconnect at logon
Connect using a different user name.
Sign up for online storage or connect to a network server.
< Back
Finish
Cancel

It is important to remember that all mapped drives on a single LinkStation must use the same username and password. This means that even unsecure, unrestricted mapped shares will have to login using the secured share's username and password.

Connect As...
By default, you will connect to the network folder as BUFFALOBRIAN\BrianAdmin. To connect as another user, enter their user name and password below.
User name:
Password:
OK
Cancel

If only unrestricted shares are being mapped, then it is not necessary to set a username and password for the shares. Multiple mapped drives to unrestricted shares can exist without a username and password (as long as no restricted, secure shares are mapped).

Disk Errors

If LinkStation encounters a disk error, it will be reported in the LinkStation status on the top of any of the Web-Based configuration screens. It is recommended to start a Normal Disk Scan in the event of this error. If that doesn't work, try running a Thorough Disk Scan. Additionally, if that still does not resolve the problem a format is recommended. Formatting the drive will delete all of the data on it so try to backup any data you can before this process is started. Finally, if none of the above solutions help, then please contact our technical support.

Diagnostic LED Flash Codes:

3 flashes - Partition problem with hard drive. Reformat the hard drive.
4 flashes - Fan problem.
5 flashes - ROM problem.
6 flashes - Hard Drive can not be recognized.
7 flashes - Problem with motherboard (RAM, LAN, or Hard Drive controller).

LAN Standards:	Auto-MDIX10/100/1000 Base-T Ethernet
Transmission Types:	1000BASE-T: 8B1Q4, PAM5; 100BASE-TX 4B/5B, MLT-3;10BASE-T Manchester Coding
Access Media:	CSMA/CD
Media Interface:	RJ-45
USB Standard:	USB 2.0 Hi-Speed (HS) Full-Speed (FS) Low-Speed (LS)
USB Connector:	USB 2.0 Connectors (2)
Data Transmission Speed:	Max: 480 Mbps (HS Mode) Max: 12 Mbps (FS Mode)
Electric Current:	5.0V
Power Consumption:	Average 21W with no USB devices attached
Dimensions:	2.4 x 6.94 x 7.4 in. (60 x 173.5 x 185 mm.)
Weight:	3.1 lb. (1.4 kg.)
Operating Temperature:	5-35° C; 20-80% non-condensing

Buffalo Technology USA, Inc.
4030 West Braker Lane, Suite 120
Austin, TX 78759-5319

GENERAL INQUIRIES

Monday through Friday
8:30am-5:30pm CST
Direct: 512-794-8533 | **Toll-free:** 800-456-9799 | **Fax:** 512-794-8520 | **Email:** *sales@buffalotech.com*

TECHNICAL SUPPORT

North American Technical Support by phone is available 24 hours a day, 7 days a week. (USA and Canada).
Toll-free: (866) 752-6210 | **Email:** *info@buffalotech.com*

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United Kingdom

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Phone: +353 61 70 80 50
Email: *helpdesk@buffalo-technology.ie*
*Calls cost 8.5p per minute

Technical Support Operating Hours
Monday - Friday (GMT)
9:00 AM - 6:00 PM Monday-Thursday
9:00 AM - 4:30 PM Friday

Thank you for your interest in Buffalo products. Our GPL software delivery policy is outlined below.

For each individual product and revision, please send one individually packaged self addressed padded CD shipping envelope, containing a blank CD-R to the following address:

Buffalo Technology USA Inc.
4030 W. Braker Lane Suite 120
Austin, TX 78759
Attn. GPL Department

Within the envelope containing the self addressed padded CD shipping envelope, please include a bank draft or money order for $20 (USD) (Made out to: Buffalo Technology) to cover our handling fee, postage and CD preparation. The CD-R should have the name of the product and revision number clearly written on the actual CD-R (not on the insert).

We do not send GPL source in bulk on a DVD. And order confirmation is not required by the GNU General Public License.

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Free Zone East, Shannon, Co. Clare
Ireland
Attn. GPL Department

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